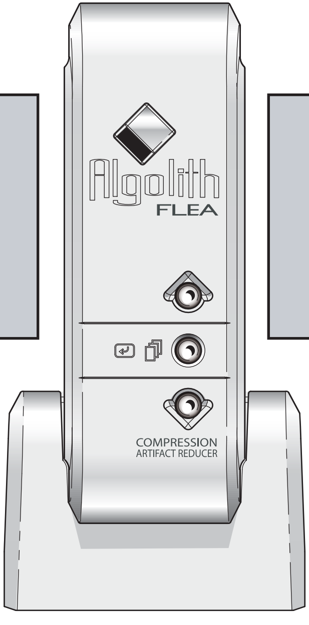
FLEA


Algolith
FLEA
COMPRESSION
ARTIFACT REDUCER

Guide to installation and operation

Algolith

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C3012-8001-200

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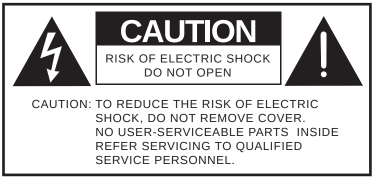
Warning

WARNING:
To prevent fire, shock hazard or product damage, do not expose the unit to rain or moisture, dripping or splashing of any liquids.

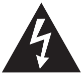
CAUTION:
- Ensure this unit is well ventilated. To prevent hazard due to overheating, ensure that curtains and any other type of materials do not obstruct the ventilation vents.
- Do not place on another apparatus that might be heating.
- Do not install near any heat sources such as radiators, stoves, or other apparatus (such as amplifiers) that produces heat.



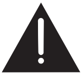
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC
SHOCK, DO NOT REMOVE COVER.
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED
SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the litterature accompanying the appliance.

Electromagnetic Compatibility

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no garantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

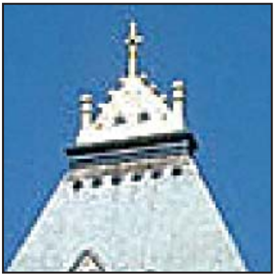
This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protected technology must be authorized by Macrovision and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Introduction

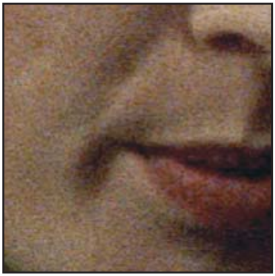
Compression Artifacts

Digital video compression has introduced a new set of picture artifacts known in the industry as «mosquito noise» and «blocking artifacts». These new degradations coexist with analog video noise and become quite objectionable when seen on today's large screen displays (see images below).

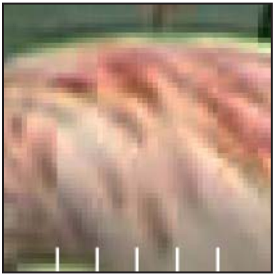
Algolith's **Flea** has been engineered to reduce the appearance of noise and compression artifacts, allowing for a much better viewing experience.



Mosquito Noise



Analog Type Noise



Blocking Effect

Flea

Flea is a three-dimensional digital noise reduction processor, designed to clean up signals from DVD Players/Recorders, Satellite Receivers, Cable Decoders, PVRs and other digital devices using MPEG-2 compression.

Flea performs four distinct image noise reduction techniques.

1- Mosquito noise is removed, using Algolith's proprietary region-based algorithm.

2- Block Artifact Reduction (BAR) blends and diminishes the inherent 8 x 8 pixel block structures of MPEG2 images.

3- Algolith's advanced motion adaptive temporal filtering eliminates "bad reception and low light" noise.

4- **Flea** provides image enhancement using non-linear filters for exceptionally sharp and noise free pictures.

Getting Started

Accessories

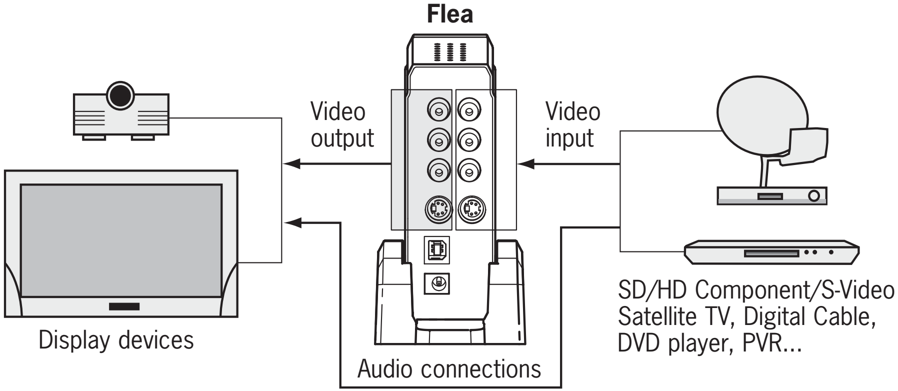
Your **Flea** comes with the following:

- 1 Power Supply DC 12V
- 1 Operation Manual
- 1 Stand
- 1 Demo DVD

Connecting your Flea

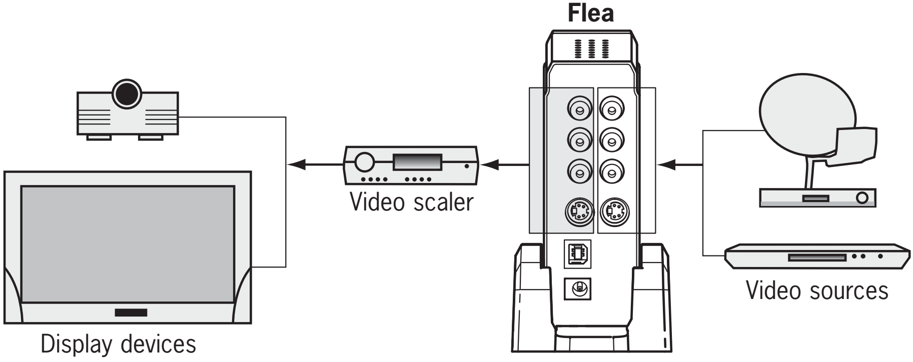
Typical Set-up

Flea should be installed between your video sources and your display device. See figure below for a typical set-up.


Flea
Video output
Video input
Display devices
Audio connections
SD/HD Component/S-Video
Satellite TV, Digital Cable,
DVD player, PVR...

- **Flea** does not have audio processing capability. When two video sources are connected, switching from one source to the other will require external audio switching. The video processing delay introduced by **Flea** is negligible, and does not require any audio delay compensation.

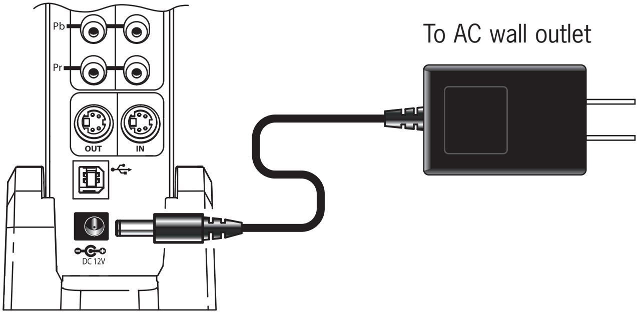
- People owning a Dragonfly Video Scaler should always install the **Flea** between the Video Sources and before the Video Scaler.


Flea
Video scaler
Video sources
Display devices

- To enhance your Home Theatre listening experience, the **Flea** is fanless and achieves cooling through natural convection and dissipation of heat. Therefore, when installing the **Flea**, do not obstuct any of its air vents, nor place it over heat dissipating devices such as amplifiers. Placing the **Flea** near heat sources can damage it or cause it to overheat and not operate properly.

Power Connections

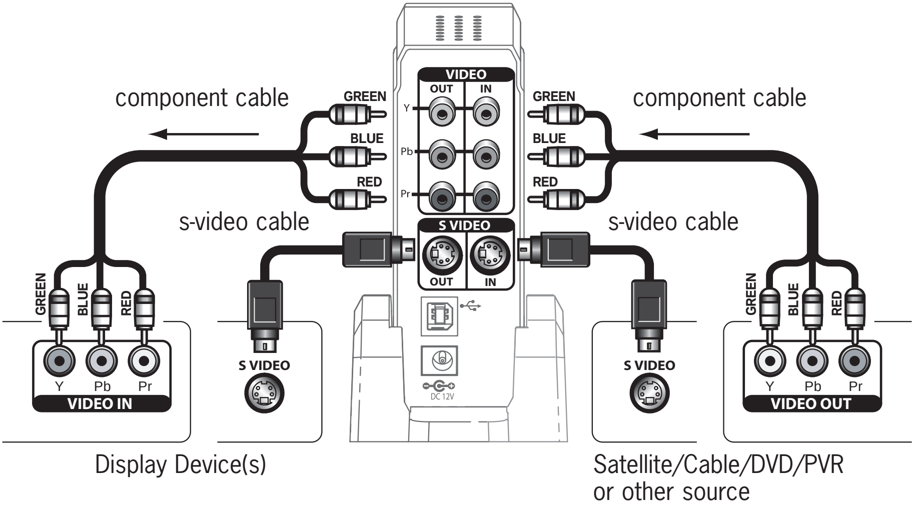
The **Flea** comes with an external power supply and an AC power cord.


To AC wall outlet
Pb
Pr
OUT
IN
DC 12V

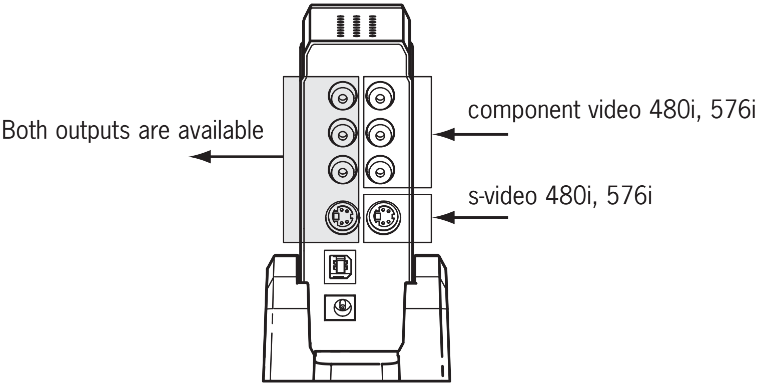
Note: Only use the power supply provided with the **Flea**

Video Connections

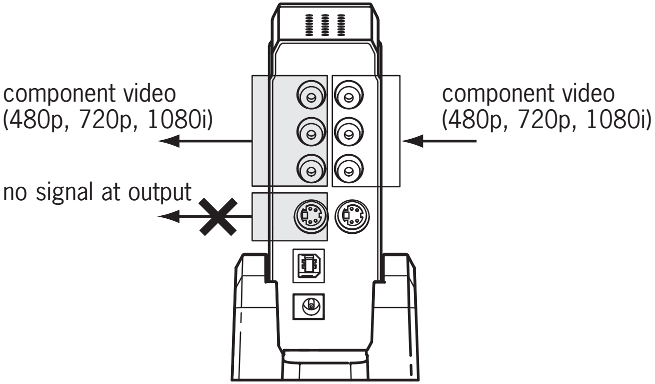
The **Flea** accepts SD or HD analog video signals. 1 set of component input terminals and 1 S-Video input terminal are provided (cables are not supplied).


component cable
component cable
VIDEO
OUT
IN
Y
Pb
Pr
GREEN
BLUE
RED
GREEN
BLUE
RED
s-video cable
s-video cable
S VIDEO
OUT
IN
DC 12V
GREEN
BLUE
RED
Y
Pb
Pr
VIDEO IN
S VIDEO
S VIDEO
GREEN
BLUE
RED
Y
Pb
Pr
VIDEO OUT
Display Device(s)
Satellite/Cable/DVD/PVR
or other source

- A signal received at the **Flea** component input in 480i or 576i, will go out from both the component and S-Video outputs. A signal received at the S-Video input in 480i or 576i will go out from both the component and S-Video outputs.

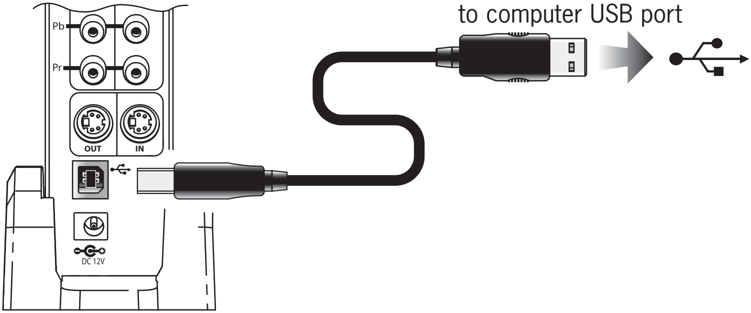

Both outputs are available
component video 480i, 576i
s-video 480i, 576i

- A signal received at the **Flea** component input in 480p, 720p and 1080i, will only go out from the component output, in the same format.


component video
(480p, 720p, 1080i)
component video
(480p, 720p, 1080i)
no signal at output

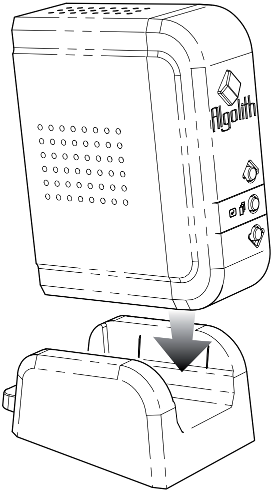
USB Port

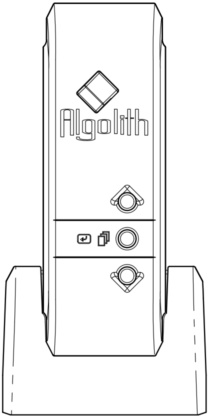
The USB port can be used to update the **Flea** to the latest available firmware using your PC's USB port and a USB cable. Visit Algolith's website (**www.algolith.com**) for availability of the latest firmware updates and download instructions.


to computer USB port
Pb
Pr
OUT
IN
DC 12V

Stand

The **Flea** comes with a stand.

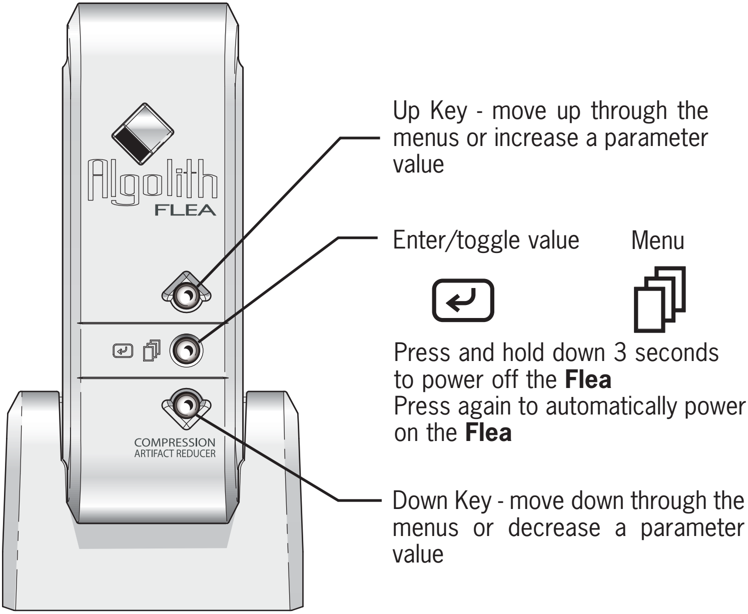




Operating **Flea**

Front panel keys

The front panel keys used in conjunction with the On Screen Display (OSD) allows you to change parameters on the **Flea**.



Up Key - move up through the menus or increase a parameter value

Enter/toggle value

Menu

Press and hold down 3 seconds to power off the **Flea**
Press again to automatically power on the **Flea**

Down Key - move down through the menus or decrease a parameter value

Menu

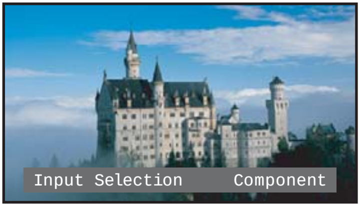
Use the menu to select the noise reduction mode, adjust various settings and view other useful information about your **Flea** settings.

(See the Technical Tutorial at the end of this guide for technical information and tips on how to set your **Flea**).

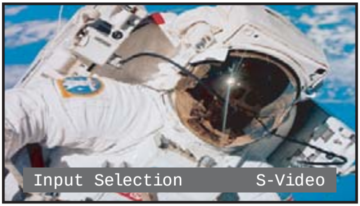
Input Selection

Use the **Input Selection** function to select between the component input and the S-Video input.

1- Press 🗗 to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Input Selection** command.



```
Input Selection      Component
```



```
Input Selection        S-Video
```

3- Press ↵ to change the selected input. You will get a checker board pattern if no video signal is present at the selected input.
4- The menu will disappear by itself after a few seconds.

Status

Use the status parameter to display the firmware version of the **Flea** and other complementary information.

1- Press 🗗 to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Status** command.

```
Status                    off
```

3- Press ↵ to set Status to on.

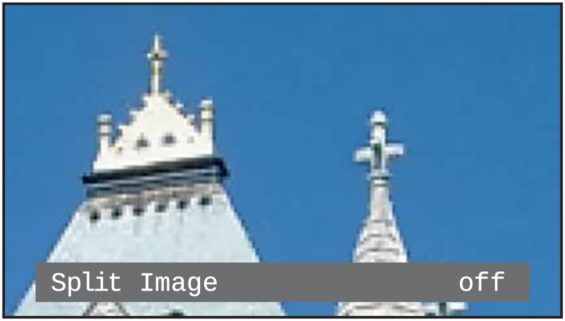
```
          STATUS
Input Selection                1
Input Video Format        720p60
Color Space               YBR422
Revision Number             2.01
Serial Number        3014-000100
```

4- The menu will disappear by itself after a few seconds.

Split Image

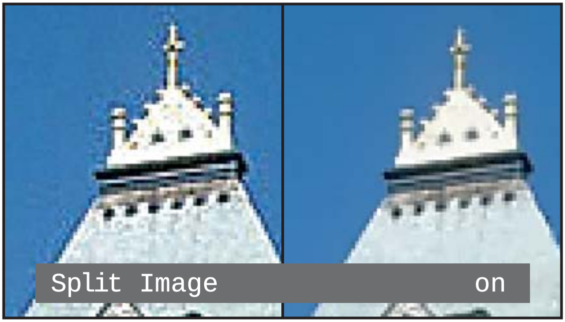
Use the **Split Image** function to view the input image before and after processing. The two images appear side by side on your screen. This function is useful to perform processing evaluation and adjustments. Left side of screen is unprocessed.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Split Image** command.



Split Image off

3- Press ↵ to turn **Split Image** on and off.



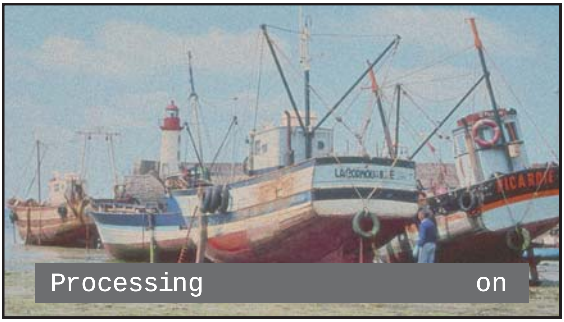
Split Image on

4- The menu will disappear by itself after a few seconds.

Processing

Use the processing function to enable or disable noise reduction, block artifact reduction, dynamice range stretching and detail enhancement (the «processing» of the video image). When **Processing** is off, your image is displayed as received from the source.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Processing** command.



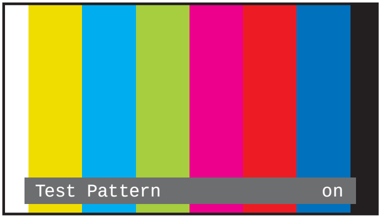
```
Processing                    on
```

3- Press ↵ to turn **Processing** on and off.
4- The menu will disappear by itself after a few seconds.

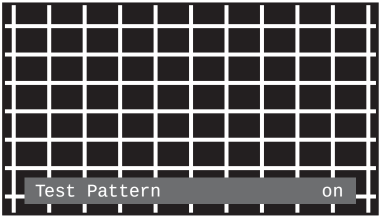
Test Pattern

A color bar test pattern has been included in your Flea to ease display adujstments.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Test Pattern** command.



Test Pattern on



Test Pattern on

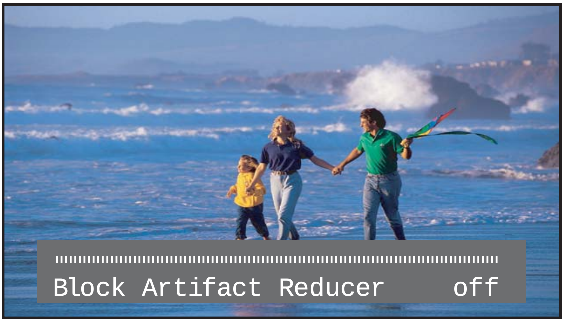
3- Press ⏎ to turn the **Test Pattern** on.
4- Press ⏎ again to turn the **Test Pattern** off. (This command will not disappear by itself to allow you all the time necessary to perform the color adjustments).

Note: The test pattern will show color bars in 480i and 576i, and will show a hatched pattern when activated in component 480p, 720p and 1080i.

Block Artifact Reducer

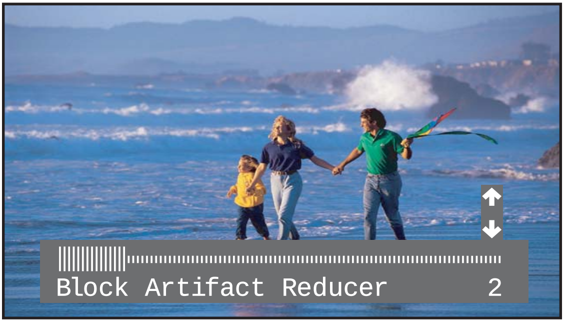
The **Block Artifact Reducer** function sets the level of block artifact reduction in the image.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Block Artifact Reducer** command.



Block Artifact Reducer off

3- Press ⏎ to enter the **Block Artifact Reducer** edit mode. Notice that 2 arrows will appear over the menu.



Block Artifact Reducer 2

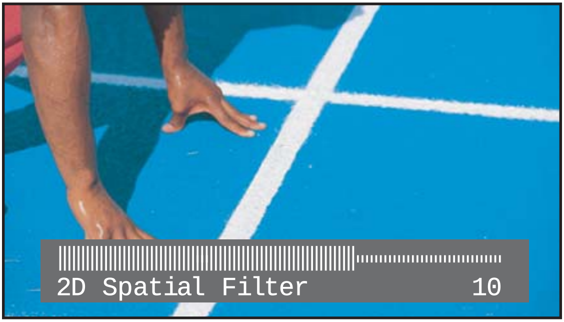
4- Press the Up or Down keys to adjust the level of filtering from 0 (off) to 4.
5- The menu will disappear by itself after a few seconds.

Note: The **Block Artifact Reducer** function is N/A (not available) when **Processing** function is set to off.

2D Spatial Filter

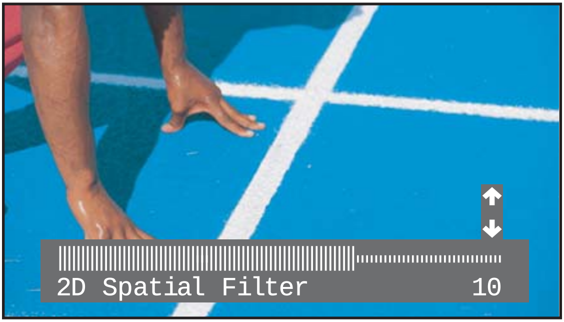
The 2D Spatial Filter function sets the level of 2D, or spatial noise filtering

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **2D Spatial Filter** command.



2D Spatial Filter 10

3- Press ⏎ to enter the **2D Spatial Filter** edit mode. Notice that 2 arrows will appear over the menu.



2D Spatial Filter 10

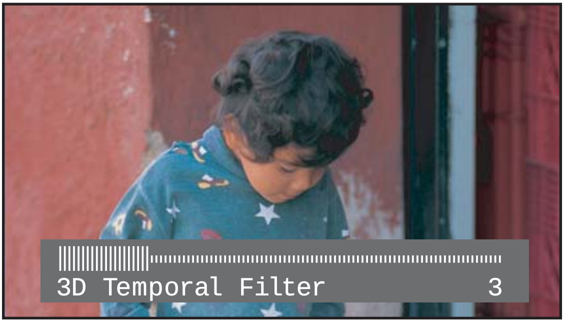
4- Press the Up or Down keys to adjust the level of filtering from 0 (off) to 15 (max).
5- Press ⏎ to save the spatial filtering level, or wait for menu to disappear.

Note: The **2D Spatial Filter** function is N/A (not available) when **Processing** function is set to off.

3D Temporal Filter

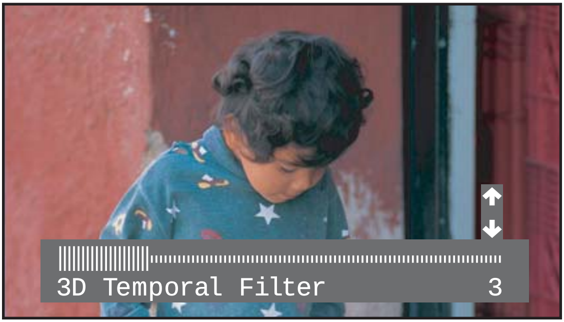
The 3D Temporal Filter sets the level of 3D, or temporal noise filtering.

1- Press 🗗 to access the menu.
2- Press the Up or Down keys to move through the menu and access the **3D Temporal Filter** command.



3D Temporal Filter 3

3- Press ↵ to enter the **3D Temporal Filter** edit mode. Notice that 2 arrows will appear over the menu.



3D Temporal Filter 3

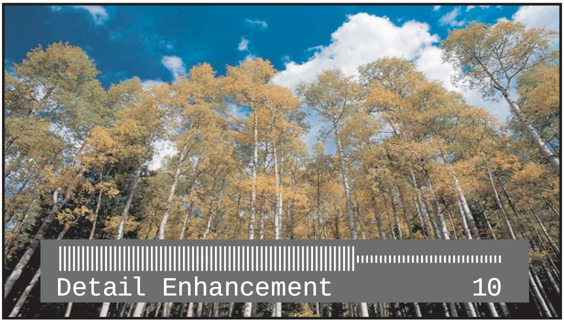
4- Press the Up or Down keys to adjust the level of filtering from 0 (off) to 15 (max).
5- Press ↵ to save the Temporal filtering level, or wait for menu to disappear.

Note: The **3D Temporal Filter** function is N/A (not available) when **Processing** function is set to off.

Detail Enhancement

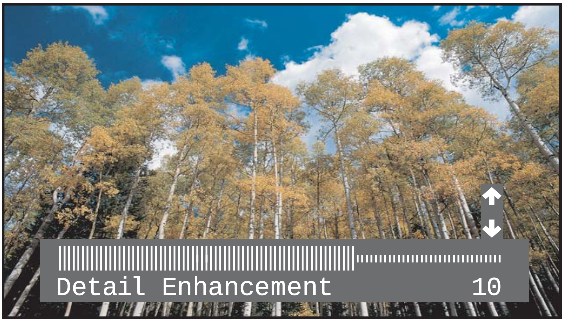
The **Detail Enhancement** function sets the level of detail enhancement in the image.

1- Press ❐ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Detail Enhancement** command.



Detail Enhancement 10

3- Press ↵ to enter the **Detail Enhancement** edit mode. Notice that 2 arrows will appear over the menu.



Detail Enhancement 10

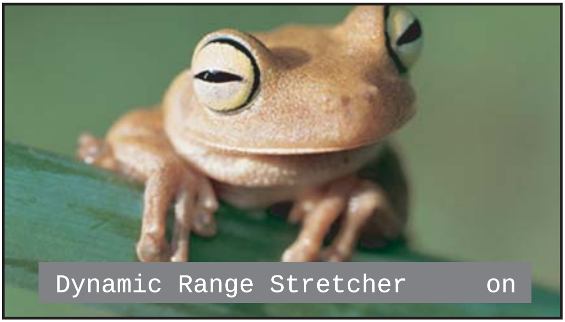
4- Press the Up or Down keys to adjust the level of detail enhancement from 0 (off) to 15 (max).
5- Press ↵ to save the detail enhancement level, or wait for menu to disappear.

Note: The **Detail Enhancement** function is N/A (not available) when **Processing** function is set to off.

Dynamic Range Stretcher

The **Dynamic Range Stretcher** function turns the normalization of the image on and off.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Dynamic Range Stretcher** command.



Dynamic Range Stretcher   on

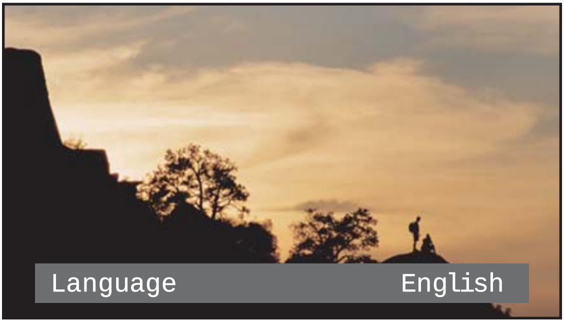
3- Press ↵ to turn **Dynamic Range Strectcher** on and off.
4- The menu will disappear by itself after a few seconds.

Note: The **Dynamic Range Stretcher** function is N/A (not available) when **Processing** function is set to off.

Language

The menu can be displayed in two languages.

1- Press ⧉ to access the menu.
2- Press the Up or Down keys to move through the menu and access the **Language** command.



Language English

3- Press ↵ to select between English and Français.
4- The menu will disappear by itself after a few seconds.

Technical Tutorial

The following section contains useful information about noise reduction and how your **Flea** will improve your viewing experience

2D Spatial and 3D Temporal Filtering

Your **Flea** reduces mosquito noise by looking at and comparing the content of the spatial (**2D**) and temporal (**3D**) domains. You can set the filtering level for each.

2D Spatial Filtering

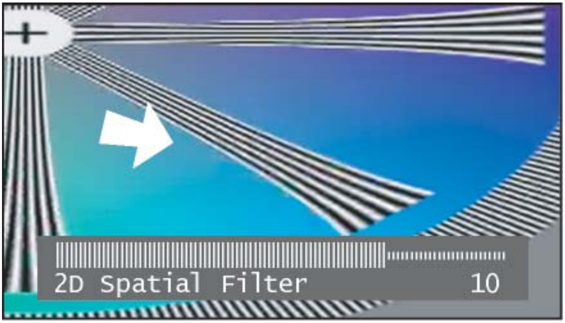
With 2D spatial filtering, images are treated as static and mosquito noise is reduced on a picture by picture basis. To experiment and view the effect of various settings and set 2D level filtering, you can put your video on «pause». You will see the effect on the paused image when you increase or decrease the filtering level.

3D Temporal Filtering

Temporal filtering (**3D**) looks at images one after the other, over time. The **Flea** searches for moving pixels in the images, then correlates this information with 2D spatial filtering. You cannot see the effect of 3D filtering when you apply it while your video is paused. Its effect is only visible on moving pictures.

Adjusting 2D Spatial Filtering

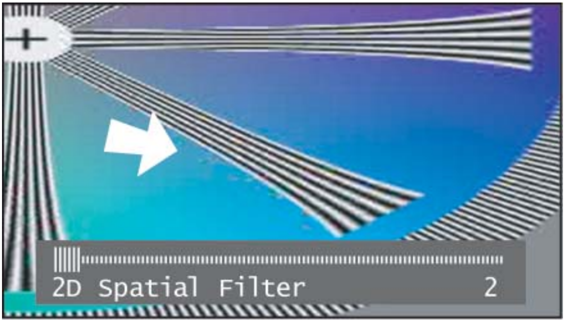
- Generally, 2D Spatial Filtering should be set to high values to remove mosquito noise. A good setting is higher than 8. However, reducing mosquito noise using the **2D Spatial Filter** shouldn't be so high as to blur image detail.



2D Spatial Filter 10

2D spatial filtering with proper settings.

- Too low a value of 2D filtering is likely to leave some mosquito noise in your image.

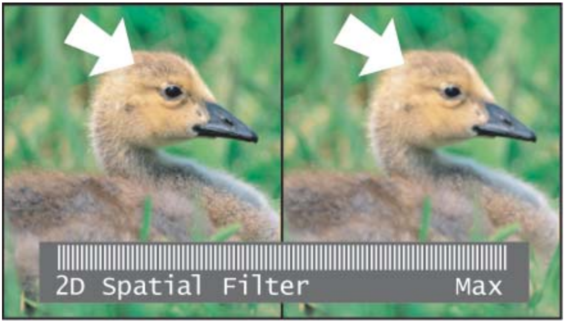


2D Spatial Filter 2

Low filtering (residual noise).

(Continued on next page).

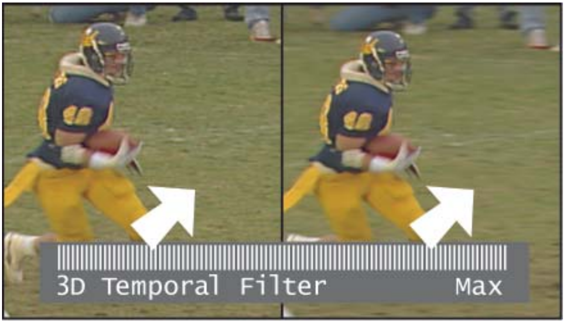
■ Too high a level of filtering can blur finer details in the image.



2D filter set too high, seen a with split image. (left image unprocessed). The finer details are lost.

Adjusting 3D Temporal Filtering

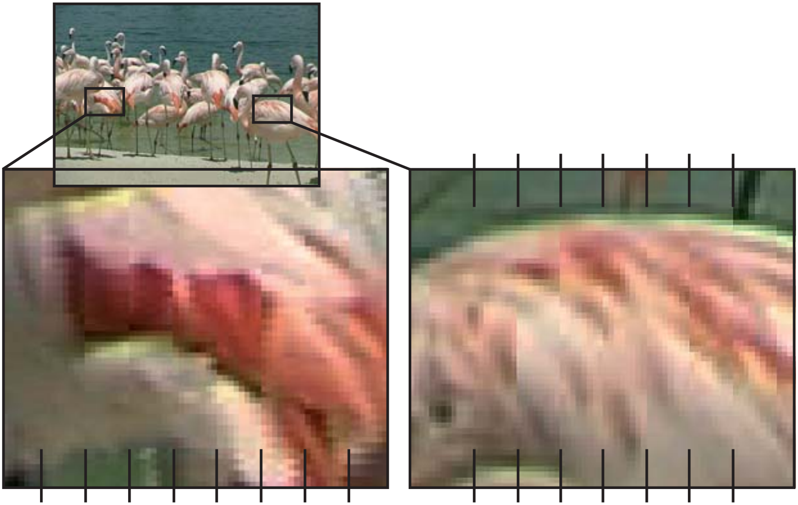
■ Generally, 3D filtering requires little adjustment and should be set to a value of about 3. If you experiment with the setting, note that a low value will work with medium and fast moving images, while a high value will work with slow moving images. If the value is set high on moving images, the resulting images will have «image blur» and visible «image retention».



3D filter set too high, seen with a split image. (left image unprocessed). Image blur can occur.

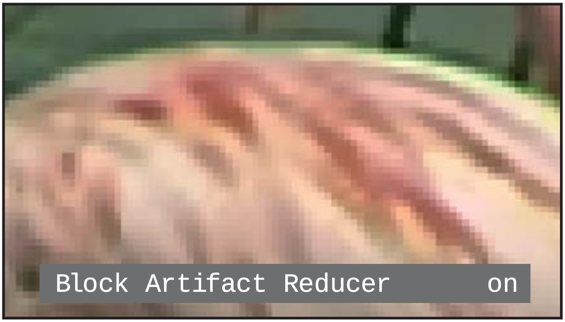
Blocking Artifacts

Blocking artifacts or «Macro-Blocking» occur whenever images are digitally compressed. These artifacts are most visible in fast moving images like sports scenes and action scenes, and in images that are high in detail and textures. Parts of your image appear to be divided into little squares.



Typical Blocking Artifacts.

Block artifact reduction will help blend in and reduce macro-blocks. To reduce blocking artifacts, set the **Block Artifact Reducer** level between 1 and 4.



Block Artifact Reducer   on

Detail Enhancement

Flea's detail enhancement is achieved after MPEG noise reduction, so you can increase detail substantially without reintroducing artifacts. Once both 2D and 3D filters are set properly, the **Flea** will yield impressive images that are sharp and noise free.

Dynamic Range Stretching

Flea's **Dynamic Range Stretching** function enhances the contrast of an image by ensuring that each image occupies the full dynamic range available. Otherwise said, images are analyzed on a pixel per pixel basis, and luminosity is recalibrated, so that details are more contrasted and more realistic to human vision.

The result is a picture with more depth, greater realism for the human eye, and finer edges in contrasting areas.

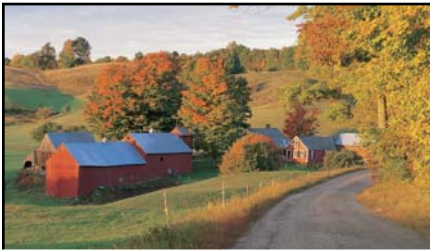


Image without DRS

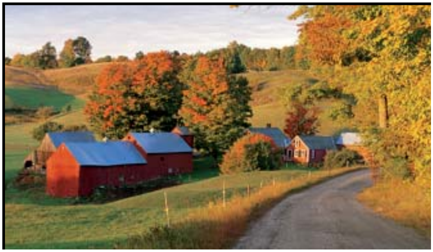


Image processed with DRS

Recommended settings

Video feeds of different image quality (a DVD movie, a satellite program...) require different filtering strengths and settings. As a starting point, Algolith recommends the following:

	SD signal	**HD Signal**
Block Artifact Reducer	1	1
2D Spatial Filter	10	6
3D Temporal Filter	3	2
Detail Enhancer	10	7
Dynamic Range Stretcher	off	off

Specifications*

Video Inputs:
- 1 Component (Y/Pb/Pr) interlaced/ progressive SD/HD
    - 480i60
    - 480p60
    - 576i50
    - 576p50
    - 720p60
    - 1080i60
- 1 S-Video interlaced SD
    - 480i60
    - 576i50
- Automatic interlaced/progressive SD/HD input detection

Video Outputs :
- Component (Y/Pb/Pr) interlaced/ progressive SD/HD
    - 480i60
    - 480p60
    - 576i50
    - 576p50
    - 720p60
    - 1080i60

    (output follows input)
- 1 S-Video interlaced SD
    - 480i60
    - 576i50
- 14-bit processing
- Proprietary 3D-MNR MPEG Noise Reduction
- Proprietary 2D Auto detection Block Artifact Reduction (BAR)
- Proprietary Detail Enhancer
- Proprietary Dynamic Range Stretcher
- USB control and upgradability

OSD:
- OSD (On Screen Display) with status feedback

Front Panel Features:
- Power on blue LED indicator
- 2 Up & Down Buttons
- 1 Menu / Enter Button

Back Panel:
- 1 Analog Component Input
- 1 Analog Component Output
- 1 Analog S-Video Input
- 1 Analog S-Video Output
- USB connector
- External DC power supply

User Selectable Controls:
- Input Selection
- Split Image (on/off)
- Processing (on/off)
- Test Pattern (on/off)
- Block Artifact Reduction Level
- 2D Noise Reduction Level
- 3D Noise Reduction Level
- Detail Enhancement Level
- Dynamic Range Stretching Level

Power:
- External AC Adaptor
- Input: 90-240 VAC 1A
- Output: 12VDC 4.5A
- Fanless chassis

Mechanical:
- Width: 2.75 in.
- Depth: 5 in.
- Height: 5.5 in.
- Weight: 1 lbs
- Footstand

* Specifications are subject to change without notice. Weight and dimensions are approximate.

Limited Warranty

Limited Warranty Coverage

Algolith Inc. warrants that the equipment it manufactures shall be free from defects in material and workmanship for a period of one (1) year from the date of purchase. If equipment fails due to such defects, Algolith Inc. will, at its option, repair or provide a replacement for the defective part or product.

Equipment that fails after the warranty period or has been operated or installed in a manner other than that specified by Algolith, or has been subjected to abuse or modification, will be repaired for time and material charges at the Buyer’s expense.

All out-of-warranty repairs are warranted for a period of ninety (90) days from the date of shipment from the factory.

A purchase receipt or other proof of the original purchase date is required for warranty service.

Algolith Inc. makes no other warranties, expressed or implied, of merchantability, fitness for a particular purpose or otherwise. Algolith’s liability for any cause, including breach of contract, breach of warranty, or negligence, with respect to products sold by it, is limited to repair or replacement by Algolith, at its sole discretion.

In no event shall Algolith Inc. be liable for any incidental or consequential damages, including loss of profits.

Troubleshooting

Please read the following troubleshooting section carefully before calling Algolith's support lines.

Television screen is blank:

1- Is the Flea on?

Source signals go through the **Flea**. When the **Flea** is off (power supply not connected), no picture can reach the display device.

2- Is a valid input selected?

Selecting a vacant input (ex. no signal present at component input) will leave the screen blank. Use the On Screen Display (OSD) to select a valid input (see **Input** on page 7 and 11).

3- Do you have the right connection?

A S-Video cable between the **Flea** and the display device will not carry the signal from a component cable between the source and the **Flea**. (See **Video Connections** on page 7-8).

OSD menus appear small on screen:

1- It is normal for On Screen Display menus to appear in different sizes.

A 480i/p source signal will produce a large On Screen Display whereas a 1080i source will produce a small On Screen Display.

Sound does not correspond to image:

1- The Flea does not have audio processing.

When 2 video sources are connected to **Flea**, switching from one to the other will necessitate external audio switching.

Moving portions of the image create a blurry trail:

1- 3D Filtering is set too high.

When **3D Temporal Filter** is set too high, it can create a blurry trail and cause a loss in image details. Reduce 3D filtering strength. (See **3D Temporal Filter** on page 17).

Screen shows a color bar image:

1- The Test Pattern command is on.
The **Test Pattern** command needs to be set to off. (See page 14).

Stuck with a bad image:

1- Is Processing on?
Even though the **Flea** is on, processing of the image could have been set to off and the source image is displayed with all of its moquito noise and blocking artifacts. Set **Processing** command to on. (See **Processing** on page 13).

N/A - can’t modify parameters:

1- Processing is off.
When the **Processing** function is set to off, you cannot control or modify **MNR**, **2D Spatial Filter**, **3D Temporal Filter** and **Detail Enhancement**. These parameters are «Not Available» (N/A). To modify them, set the **Processing** function to on (see page 13).

How to contact us

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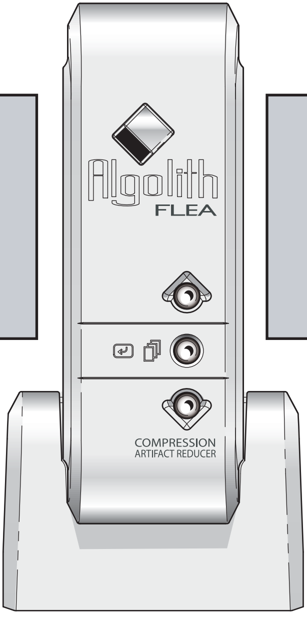
Algolith
FLEA
COMPRESSION
ARTIFACT REDUCER

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